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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/032,298	12/21/2001	Toivo T. Kodas	41890-01616	6363

25231 7590 05/12/2003

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EXAMINER
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AHMED, SHEEBA

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 05/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application N .	Applicant(s)	
	10/032,298	KODAS ET AL.	
	Examiner	Art Unit	
	Sheeba Ahmed	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 February 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5, 8-13, 15, 17-19 and 21-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 8-13, 15, 17-19 and 21-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |                                                                                              |                                                                             |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Response to Amendment*

1. The amendment submitted on February 27, 2003 (Paper No. 7) has been entered in the above-identified application. Claims 6, 7, 14, 16, and 20 have been cancelled. Claims 1 and 18 have been amended. **Claims 1-5, 8-13, 15, 17-19, and 21-27 are pending.**

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5, 8-12, 15, 18, 19, 21, and 23-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Shorthouse (US 5,173,457).

Shorthouse discloses a paste composition comprising a dielectric component of substantially spherical particles having a particle size below 5 microns (Column 2, lines 2-5). The dielectric component is preferably a powder (***corresponding to the glass powder batch of the claimed invention***) having a particle size range of 0.1 to 3 microns (***thus meeting the particle size limitations of claims 1, 8, 9, 18, 24 and 25***) and having a spherical shape (***thus meeting the limitation that the particles are substantially spherical as recited in claims 1 and 19***). The size is tightly controlled with essentially no particles outside the range, i.e., the powder is monodisperse (***thus***

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**meeting the particle size distribution limitations of claims 1-3 and 18)** (Column 3, lines 7-15). The dielectric material is preferably a glass containing oxides of silicone, boron, and aluminum (**corresponding to the complex glass particles of the claimed invention**). Preferred glasses include borosilicates, aluminosilicates (**thus meeting the limitations of claims 11, 12, 21 and 23**) and aluminoborosilicates (Column 3, lines 24-40) The particles may be heated to form porosity in the particles and subsequent heating further causes the particles to coalesce to decrease the porosity and form a glass material (**indicating that the particle density is close to the theoretical density of the glass**) (Column 3, lines 55-62). Example 1 indicates that the dielectric component is a borosilicate having 20% boron and 80% silicon as oxides (**thus meeting the limitation that the glass particles comprise at least about 95 weight % of glass as recited in claims 4 and 5 and that the particles comprise no greater than 0.1 atomic percent of impurities**) and having a particle size in the range of 0.1 to 5 microns. All limitations of claims -5, 8-12, 15, 18, 19, 21, and 23-27 are disclosed in the above reference.

3. Claims 1-5, 8, 9, 11, 13, 15, 17, 18, 21, 22, 24, 25, and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Mason et al. (US 3,813,295).

Mason et al. disclose a dielectric material comprising a lead barium borosilicate glass (**corresponding to the glass powder batch of the claimed invention**) (Column 1, lines 15-18) wherein the preferred particle size of the glass is in the range of 0.5 to 1.0 microns (**thus meeting the particle size limitations of claims 1, 8, 9, 18, 24 and**

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**25)** (Column 2, lines 20-25). The glass comprises 37% SiO<sub>2</sub>, 10% B<sub>2</sub>O<sub>3</sub>, 13% Al<sub>2</sub>O<sub>3</sub>, 15% PbO, 2% TiO<sub>2</sub>, and 23% BaO (See Example 1) ***(thus meeting the limitation that the glass particles comprise at least about 95 weight % of glass as recited in claims 4 and 5 and that the particles comprise no greater than 0.1 atomic percent of impurities)***. The dielectric material is subjected to firing at 800-1000°C ***(indicating that the particle density is close to the theoretical density of the glass)*** (Column 3, lines 14-16). All limitations of claims 1-5, 8, 9, 11, 13, 15, 17, 18, 21, 22, 24, 25, and 27 are disclosed in the above reference.

### ***Response to Arguments***

4. Applicant's arguments filed on February 27, 2003 have been fully considered but they are not persuasive. Applicants traverse the rejection of claims 1-5, 8-12, 15, 18, 19, 21, and 23-27 under 35 U.S.C. 102(b) as being anticipated by Shorthouse (US 5,173,457) and submit that Shorthouse does not disclose glass particles having "impurities of no greater than 0.1 atomic percent" and that Example 1 states that the "powder is a borosilicate of *approximate* composition of 20% boron and 80% silicon, as oxides". Applicants further argue that the particles of Shorthouse must contain at least some impurities, such as carbon, which would be the impurity resulting from the burnout of organics. However, the Examiner maintains that the glass particles disclosed by Shorthouse do not contain any impurities and that the statement that the "powder is a borosilicate of *approximate* composition of 20% boron and 80% silicon, as oxides" refers to the relative amounts of the boron and silicon oxides and not to the presence of

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a third material. Furthermore, Shorthouse teaches that the particles may be heated to form porosity in the particles and subsequent heating further causes the particles to coalesce to decrease the porosity and form a glass material and hence the Examiner maintains that at such high temperatures any impurities, such as carbon, which would be the impurity resulting from the burnout of organics, would also be burned off as carbon dioxide.

Applicants further argue that the glass particles disclosed by Shorthouse do not inherently have a density that is at least 95% of the theoretical density because, the Applicants allege, a heating temperature that is sufficiently high to cause a glass to flow to cause the particle to approach the theoretical density would also be high enough to cause excessive coalescence of the particles. However, there is no indication that any coalescence of the particles occurs and in fact, Shorthouse, simply states that the particles are heated to cause the particles to coalesce to decrease the porosity and form a glass material.

Hence, the rejection of claims 1-5, 8-12, 15, 18, 19, 21, and 23-27 under 35 U.S.C. 102(b) as being anticipated by Shorthouse (US 5,173,457) is maintained.

### ***Conclusion***


5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheeba Ahmed whose telephone number is (703)305-0594. The examiner can normally be reached on Mon-Fri 8am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on (703)308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-5408 for regular communications and (703)305-3599 for After Final communications.

  
Sheeba Ahmed  
May 8, 2003

  
Paul Thibodeau  
Supervisory Patent Examiner  
Room Center 1700